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HAZARDOUS WASTE MANAGEMENT




A GUIDE FOR COMMUNITY INVOLVEMENT IN THE SAN FRANCISCO BAY AREA

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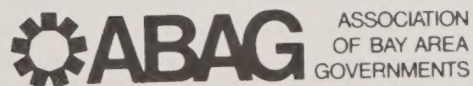
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I. HAZARDOUS WASTE: WHY SHOULD WE CARE?

Hazardous waste generation and disposal is one of the major environmental issues of the '80s. Decisions made today will have significant effects lasting far beyond the life span of the decision makers. While Federal and State governments have passed important hazardous waste legislation, substantial quantities of hazardous waste are still being improperly disposed of in the environment. Major uncertainties and disagreements remain concerning the adequacy of waste disposal technologies and policies. While industrial activities bring benefits to a broad spectrum of society, very localized areas often bear the majority of the environmental and economic costs. Yet, hazardous waste management has been largely ignored at the local level.

The media has focused attention on incidents of improper management, and names such as Love Canal, Times Beach and Stringfellow have become notorious. However, public involvement in hazardous waste issues usually has taken only the form of **negative reaction** to existing or proposed conditions: demonstrations against facility siting, demands for site clean-up, and fear of environmental and health effects. Few **positive actions** have been taken by local governments to manage hazardous waste recognizing its integral association with our industrialized society.

Elected officials have an inherent responsibility to protect the health, safety and welfare of their constituencies. Much of the development and character of a community is determined by local activities through mechanisms such as general planning, zoning, and the local tax structure. Opportunities also exist for local communities to participate in determining sources and fates of hazardous waste within their jurisdiction. Gaining an understanding of hazardous waste issues is prerequisite to adequately formulate local policy direction. At a minimum, local officials and community leaders need to understand implications of decisions made at higher levels of government. This booklet is intended to provide a resource for gaining some understanding of these key issues and direction for obtaining more detailed information.

Good general readings on this topic include: Hazardous Waste in America by Sam Epstein, Lester Brown and Carl Pope (Sierra Club Books, San Francisco, 1982); Laying Waste: The Poisoning of America by Toxic Chemicals by Michael Brown (Pantheon, New York, 1979) and Love Canal: Science, Politics and People by Adeline Gordon Levine (Lexington Books, Lexington, 1982).



That stuff can get you in
the most unexpected ways!



II. THE POTENTIAL FOR HARM

The term "hazardous waste" is frightening, evoking images of imminent danger and harm. Yet, the existing risk from hazardous waste is not well known. Even in a highly publicized case like the Love Canal, health effects have not been definitively determined, although the economic loss is known to be substantial. Issues that must be addressed to evaluate the impact of hazardous waste include:

- o what is hazardous waste
- o where is it generated
- o how much is generated
- o where is it disposed of
- o what is the threat to health and the environment
- o can it be removed from sensitive areas

The complexity of waste and the uncertainties of generation and disposal have made answers to the above questions difficult. However, it is imperative that adequate answers be found both to protect human health and the environment, and to prevent unnecessary burdens on industry.



Which one is most dangerous?



WHAT IS HAZARDOUS WASTE?

While in common discussion "hazardous waste" may seem to be a self-defining phrase, formulating a precise definition suitable for regulatory and management purposes has proven to be a difficult and controversial task. Hazardous waste is defined in the Resource Conservation and Recovery Act (RCRA) of 1976 (the major Federal legislation establishing the current framework for hazardous waste control) as:

a solid waste, [encompassing solid, liquid semisolid, and contained gaseous waste material] or combination of solid waste, which because of its quantity, concentration, or physical, chemical, or infectious attributes may:

- (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

- (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Some states, including California, have developed their own definitions, with revisions expected shortly. In California, hazardous waste is **currently** defined as:

any waste material or mixture of wastes which is **toxic, corrosive, flammable**, an irritant, a strong sensitizer, or which generates **pressure** through decomposition, heat or other means, if such a waste or mixture of wastes may cause substantial injury, serious illness or harm to humans, domestic livestock, or wildlife.

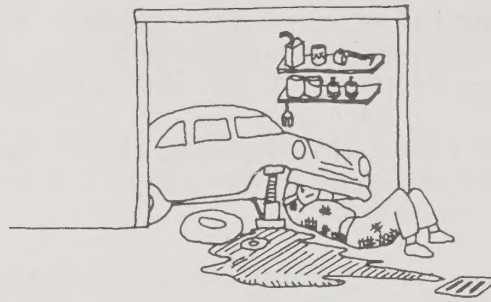
Furthermore, California has specific regulatory standards for **extremely** hazardous wastes:

any substance or mixture of substances which, if human exposure should occur, may likely result in death or disabling personal injury because of the quantity, concentration, or chemical characteristics of the hazardous waste or mixture of hazardous wastes.

Both the State and the Federal Government have developed lists of hazardous wastes, and these lists are **not** completely consistent. Thus, waste may be considered hazardous by one system and innocuous by the other. The Federal system excludes certain general classifications of waste not paralleled in State regulations. In addition, differences between the types of materials that are regulated as hazardous waste, and differences between the degree of threat offered by various kinds of waste severely complicate hazardous waste management.

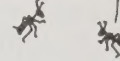
It is important to be aware of the distinction between hazardous **waste** and hazardous **material**. Hazardous waste comprises only a subset in the universe of hazardous material. While both have the potential to cause significant harm to human health and the environment, the regulatory framework governing each is very different. A good general, although not regulatory, distinction is that hazardous waste is hazardous material being disposed of. This includes hazardous material spills - following a spill a hazardous material becomes waste.

Additional information about regulatory definitions of hazardous waste can be obtained from Subtitle C of RCRA or from Federal regulations 40 CFR Part 260 et seq. Hazardous waste definitions and regulations for California are located in the Health and Safety Code Section 25110 et. seq.



He ought to be an expert! Why he's fixed that part eighteen times already!

No, nineteen times!



WHERE IS IT GENERATED?

Pool chlorine, garden insecticide, paint thinner, and automobile crankcase oil are all examples of common material that when disposed of becomes hazardous waste. More commonly considered as hazardous waste is material generated by major industrial operations such as petroleum refining and chemical manufacturing. Hazardous waste can be found almost anywhere as a by-product of industrial society. Even in areas with little local generation, individuals should be aware that many of the goods and services used in their daily lives result in hazardous waste production.

Studies in California indicate that over 65% of the total hazardous waste stream is produced by industries associated with the manufacture of chemical and allied products, petroleum and coal products, and the extraction of oil and gas. Generation from small sources (small generators are commonly defined as those sources producing no more than 1000 kilograms (2200 pounds) of waste monthly) has been estimated to account for 1-4% of the total hazardous waste stream. The distribution of waste production by major generators is shown in Figure 1. While hazardous waste can be expected to be found almost anywhere, it is frequently concentrated in areas of major industrial and/or mining activities.

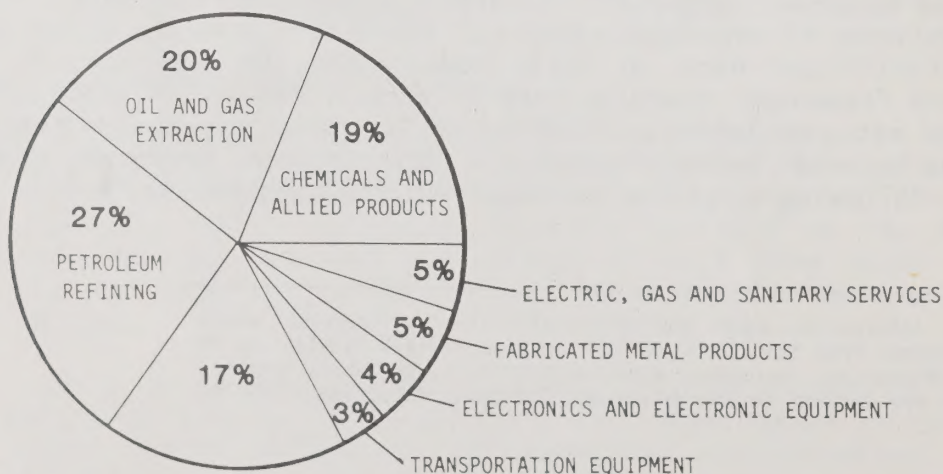


Figure 1. MAJOR GENERATORS OF HAZARDOUS WASTE IN CALIFORNIA



Just count the feet
and divide by four



HOW MUCH IS GENERATED?

To manage hazardous waste it is important to know the quantities and types of hazardous waste generated. Unfortunately, this information currently is not available in enough detail or with enough accuracy to provide adequate direction for management activities.

Estimates of hazardous waste generation vary widely. For example, the U.S. Environmental Protection Agency (EPA) estimates about 2.9 million tons annual hazardous waste generation in California, while reporting State estimates of about 16.5 million tons. Most of the large discrepancy is due to different ways of considering large volumes of waste containing low levels of hazardous materials such as those associated with certain mining activities and industrial sludges, and for considering low levels of waste discharged in water.

Another difficulty in estimating hazardous waste quantities is the lack of a comprehensive accounting system. While a major function of RCRA was to establish "cradle-to-grave" control of hazardous waste, adequate systems of record keeping have generally not been established. In California, a manifest system nominally allows the tracking of hazardous waste disposed of off-site (removed from the generating facility). While the California Department of Health Services (DHS) has recently compiled some manifest records to estimate waste production, no general system exists for the rapid retrieval of this information to meet the specific needs of a community. In addition, only about 25% of hazardous waste is disposed of off-site, with the majority disposed of on-site (at the generating facility). No comprehensive manifest system exists for these wastes, and estimates of waste production can only be generated through means such as review of industry permits.

Most waste accounting systems equally value any material qualifying under the general definition of hazardous waste, regardless of the degree of threat inherent in the material or the ease of disposal. However, knowledge of the nature and quantity of specific waste streams is important to determine disposal options and health and environmental risks. Data for the region are only available for waste stream types disposed of off-site. Figure 2 shows the predominant waste types (disposed of off-site) for the region.

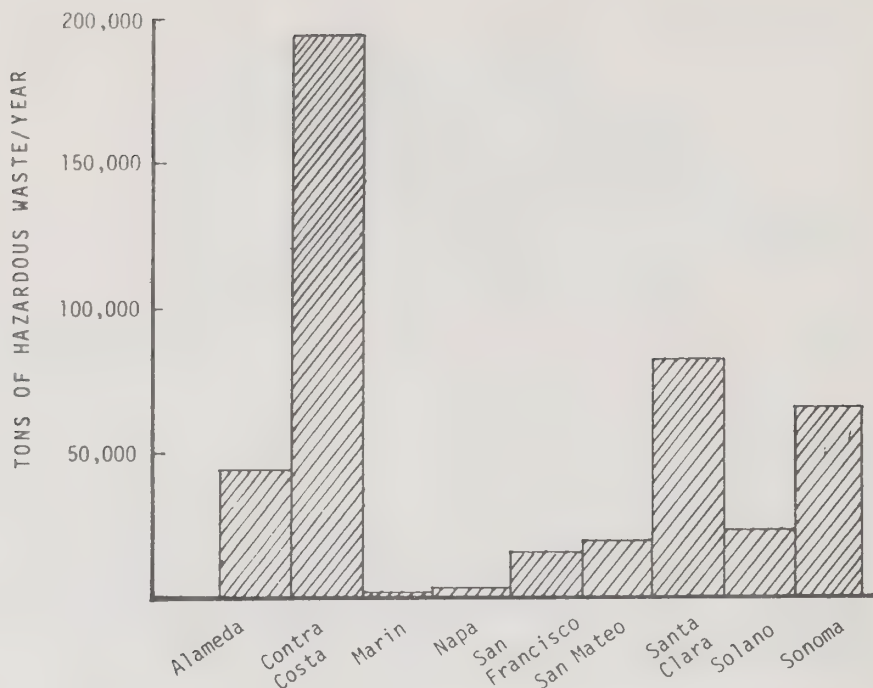


Figure 2. QUANTITY OF HAZARDOUS WASTE GENERATED BY BAY AREA COUNTIES AND DISPOSED OF OFF-SITE



WHERE DO WE DISPOSE OF IT?

The majority of hazardous waste is disposed of on-site (at the same facility that it is produced), with most estimates upwards of 75% of the total waste stream. Little information is readily available concerning this waste or long-term disposal capacity. Some of this information may be on file by the State Department of Health Services, although the Department has not been able to produce a comprehensive report regarding on-site disposal as required by the State Hazardous Waste Management Council. While most attention has traditionally been focused on hazardous waste transported to a disposal facility separate from the generating facility (off-site disposal), waste disposed of on-site

probably has a much larger potential currently for resulting in harm to human health or the environment. In addition, on-site disposal facilities will probably place a greater burden than the few off-site facilities on those agencies responsible for ensuring and promoting proper hazardous waste management. It is important that a lack of information not be allowed to mask the significance of on-site hazardous waste disposal.

Off-site disposal of hazardous waste is available legally in California only at Class I and Class II-1 landfills. Class I landfills accept most types of hazardous wastes with the notable exception of radioactive materials. Hazardous wastes are **not routinely allowed** in a **Class II-1 landfill**, but certain site specific hazardous wastes may be permitted by the Regional Water Quality Control Board. Hazardous waste permitted at a Class II-1 landfill will often be only marginally hazardous, such as sludge from a treatment process that contains a relatively low concentration of hazardous material.

Seven Class I facilities are located in the State, with three in the Bay Area (shown on Figure 3). The West Contra Costa landfill in Richmond handles fairly small quantities of hazardous waste, with the majority of the site being used for municipal waste disposal. The other two facilities, owned by IT Corporation, are located in Benicia and Martinez. The site in Benicia is used to dispose of solid and liquid waste, while the site in Martinez is a treatment facility without a landfill.

Five Class II-1 facilities are in the region, although the Altamont Sanitary Landfill in Alameda County is currently not accepting any hazardous waste (see Figure 3).

Much of the information regarding hazardous waste generation and disposal was taken from several reports to the State Hazardous Waste Management Council prepared by the Department of Health Services. These reports can be obtained from the Department at (916) 324-1789. Other documents providing information for this report that should be obtained for a more detailed examination are:

Hazardous Waste Generation and Off-site Disposal Patterns in California by Pao C. Chau, Daniel Coffey and David F. Ollis (College of Engineering, University of California, Davis 1982); and

Alternatives to the Land Disposal of Hazardous Wastes. An Assessment for California by the California Office of Appropriate Technology, 1981 (contact DHS, hazardous waste management branch, (916) 324-1789, for information on availability).

Figure 3. CLASS I AND CLASS II-1 HAZARDOUS WASTE DISPOSAL FACILITIES IN CALIFORNIA

Class I Disposal Facilities

1. IT Environmental, Benicia
2. IT Environmental, Martinez
3. WCCC Sanitary Landfill, Richmond
4. Casmalia Disposal Company, Casmalia
5. Liquid Waste Disposal, Kettleman Hills
6. BKK Lanfill, West Covina
7. Big Blue Hills (open 4 weeks/year)



SONOMA

NAPA

SOLANO

MARIN

1

c, 2

3b

CONTRA
COSTA

SAN
FRANCISCO

a

ALAMEDA

SAN
MATEO

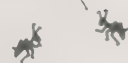
SANTA CLARA

Bay Area Class II-I Disposal Facilities

- a. Altamont Sanitary Landfill
- b. WCC Sanitary Landfill, Richmond
- c. ACME Fill, Martinez
- d. Flannery Road Disposal Site, Flannery
- e. I.T., Montezuma Hills



Where is 'JAWS' now that we need him?



WHAT IS THE THREAT TO HEALTH AND THE ENVIRONMENT?

While hazardous waste definitions clearly identify a major potential for harm they do not clearly identify the mechanisms by which they pose a threat. The EPA has developed a list of four characteristics to identify hazardous waste that is also useful in identifying the detrimental effects of these materials.

- o **Ignitability**, identifies wastes that pose a fire hazard during routine management. Fires not only present immediate dangers of heat and smoke but also can spread harmful particles over wide areas.
- o **Corrosivity**, identifies wastes requiring special containers because of their ability to corrode standard materials, or requiring segregation from other wastes because of their ability to dissolve toxic contaminants.
- o **Reactivity** (or explosiveness), identifies wastes that, during routine management, tend to react spontaneously, to react vigorously with air or water, to be unstable to shock or heat, to generate toxic gases, or to explode.
- o **Toxicity**, identifies wastes that, when improperly managed, may release toxicants in sufficient quantities to pose a substantial hazard to human health or the environment.

The first three characteristics identify immediate threats through rather obvious action. The fourth characteristic, toxicity, is generally much harder to assess. Toxic effects may not be manifested for many years after contact with the material.

Toxic materials can cause impaired health and mortality through mechanisms such as cancer, liver damage, nerve damage, birth defects and chromosome damage. It is usually very difficult to distinguish the particular toxic effect of a material since these health problems also will occur in an unexposed population. No clear consensus of methods has been developed for determining the effects resulting from the release of specific amounts of toxic materials, or for deciding the level of risk from hazardous waste release that is appropriate and acceptable.

Toxic effects are not limited to human health. Animal and plant life can be severely harmed by exposure to toxic materials. Many streams downstream of historic and current mining activity remain almost devoid of life due to the release of toxic heavy metals. Toxic contamination may threaten the existence of an entire species, as shown by the widespread use of DDT resulting in brown pelican eggs with extremely fragile eggshells.

The dangers from toxic waste is particularly insidious because it may remain a threat indefinitely, with problems being manifested long after disposal. Heavy metals ordinarily do not biodegrade or otherwise "disappear"; they will remain in some form in the environment. Some organic contaminants, notable materials such as PCB's and many pesticides, are extremely stable and will not quickly degrade. Thus, inappropriate disposal of toxic wastes can result in **serious environmental harm long after benefits have been fully realized** for the process producing these wastes.



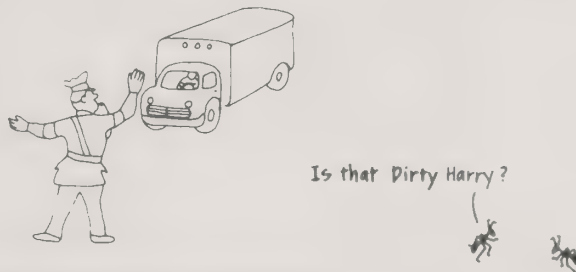
CAN IT BE REMOVED FROM SENSITIVE AREAS?

Historically, most hazardous waste has been disposed of by removing it from the immediate area. It may have been put in a river to flush away or dumped on the ground. Putting hazardous waste into landfills was long thought sufficient isolation. However, true isolation has proven to be extremely difficult and costly, with a great deal of controversy regarding its attainability.

The main difficulty with disposing of hazardous waste in the ground is that these materials may contaminate groundwater aquifers and migrate away from the site. Groundwater is a major source of drinking and agricultural water in the nation and the region. Waste may travel very slowly through an aquifer and take many years before it is withdrawn for use. This long interval between disposal and observable environmental effect greatly exacerbates the contamination problem. A great quantity of material may contaminate an aquifer before it is detected or has an impact, but the ultimate impact will often be long-lasting and severe. Cleaning up a contaminated groundwater aquifer is usually difficult and costly.

Moving hazardous waste to remote areas also raises problems with increased risk due to transport, cost of transport, and public resentment to waste being imported into "unspoiled" areas. Hazardous waste generated by industrial activities disposed off-site often must be transported through densely populated areas. Local jurisdictions have little authority to regulate material transported through their communities. Disposal at distant facilities also places an economic

burden on the waste generator. The lack of disposal facilities may be considered a deterrent to industrial growth putting a community at an economic disadvantage. Siting disposal facilities in distant areas also raises the issue of local residents, who often live in remote areas to escape pollution and live a simple life, being asked to assume this burden from distant industrial activities.



III. HOW IS HAZARDOUS WASTE REGULATED?

Hazardous waste regulations are complex, often confusing, and rapidly changing. The Resource Conservation and Recovery Act of 1976 (RCRA) is the major Federal hazardous waste legislation, providing for a "cradle-to-grave" management system. RCRA provides for identification of hazardous waste and creation of a manifest system to track waste movement. Generators and transporters are required to employ appropriate management practices, and meet standards "to protect human health and the environment." Standards for treatment, disposal and storage facilities have recently been completed by the EPA.

RCRA encourages State assumption of hazardous waste regulatory authority. California currently has interim authority over hazardous waste tank, container and waste pile storage facilities, with the Department of Health Services (DHS) being the lead agency assuming this responsibility. Authority has not been granted to the State over land disposal or incinerators, although the DHS has indicated an intent to seek this responsibility. Regulatory authority encompasses on-site as well as off-site facilities.

The DHS has the major responsibility for conducting and enforcing a hazardous waste management program at least equivalent to that imposed by RCRA. However, several other state and regional agencies have important functions regulating hazardous wastes. A summary of these responsibilities is shown on Table 1.

Involvement by numerous agencies has resulted in a somewhat complicated system for hazardous waste management. For example, obtaining a permit for a new disposal facility ordinarily requires permits from the DHS, the Regional Water Quality Control Board (RWQCB) and the Air Quality Management District. An Environmental Impact Report (EIR) must be prepared following provisions of the California Environmental Quality Act (CEQA). The permit application is reviewed by state and local agencies, and is subject to a public hearing. The EPA may participate in the process and take joint action with the DHS in permit approval or denial. The RWQCB establishes waste discharge requirements for facilities which discharge, or have the potential to discharge, waste into groundwater or surface water. The Air Quality Management District requires a facility to obtain an "Authority to

Table 1. SUMMARY OF RESPONSIBILITIES OF STATE AND REGIONAL AGENCIES (EXCLUDING DHS) GOVERNING HAZARDOUS WASTES

AGENCY	RESPONSIBILITY
Department of Food and Agriculture	Adopts regulations specifying the control of pesticide storage, transportation and disposal.
Air Resources Board	State air pollution control agency. Adopts ambient air quality standards and coordinates efforts for their attainment. Conducts and encourages air pollution research.
Highway Patrol	Enforces transportation regulations.
Department of Fish and Game	Responsible for protecting state fish and wildlife resources. Will take action when damaging activities may occur through discharge of hazardous materials.
Department of Water Resources	Administers (in conjunction with DHS) the Safe Drinking Water Bond Law and assists in protecting water supplies.
Solid Waste Management Board	Primary responsibility for non-hazardous wastes. Coordinates activities between hazardous and non-hazardous waste disposal program.
State Water Resources Control Board	State water pollution control agency. Regulates waste disposal to land, develops water quality criteria and policies, developing underground injection program, monitors toxic substances in groundwater and surface water, assists Department of Food and Agriculture in pesticide registration.
State Board of Equalization	Responsible for hazardous waste fee collection system.
Regional Water Quality Control Board	Establishes regional water quality control plans and policies. Issue waste discharge requirements and inspect facilities discharging hazardous materials. Enforces discharge requirements. Reviews and approves hazardous waste facility site closure plans.
Air Quality Management District	Responsible for controlling emissions from fixed facilities. Permitting agency regulating construction or modification of facilities.
Association of Bay Area Governments	Responsible for area-wide hazardous waste management planning.

Construct" and a "Permit to Operate" providing the facility has the potential to emit a significant quantity of pollutants.

Local governments generally have had little impact on managing hazardous waste. Requirements for consideration of hazardous waste in county solid waste management plans are nebulous, and most counties do not have substantive hazardous waste elements. Contra Costa County currently has the only hazardous waste element approved (conditionally) by the State, and Solano County has recently completed a fairly comprehensive plan. General uncertainty exists regarding the preemption of local ordinances by the State and Federal regulations, and the preemption of State law by Federal law.

Local governments and communities do play an important role in siting hazardous waste facilities. They often are the lead agencies in preparing EIRs. They determine local zoning and grant land use permits. Perhaps more importantly, community resistance has often been sufficient to stop siting of hazardous waste facilities.

Substantial activity is currently underway affecting the statewide hazardous waste management activities, including:

- o Recent regulations require a phased restriction on land disposal of high priority hazardous waste.
- o The state is sponsoring the Hazardous Waste Management Council to develop recommendations to facilitate new facility siting and to ensure full compensation for injury or damage caused by hazardous materials.
- o The DHS is developing an improved system for quantifying hazardous waste flow.
- o The RWQCB is trying to better identify and regulate on-site disposal facilities.
- o The Air Resources Board has adopted regulations for the identification and control of air toxic emissions and is proposing regulations to control volatile organic waste.

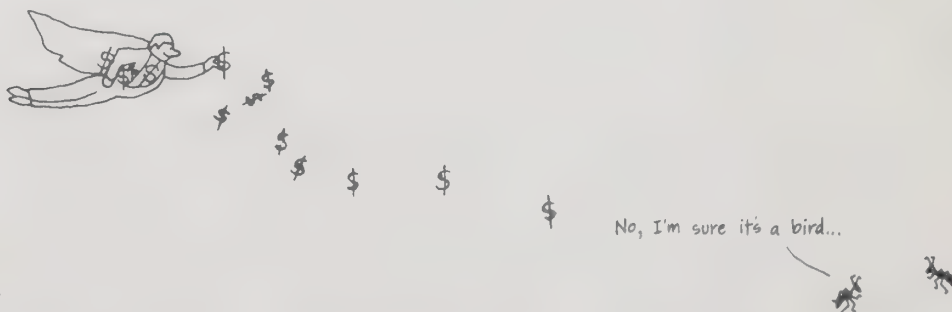
Particularly noteworthy are the new regulations phasing out the land disposal of high priority hazardous waste. Land disposal has not been shown to offer an effective means of controlling all types of hazardous waste for long periods of time. If implemented, these regulations would significantly **reduce the flow** of materials into landfills, effectively increasing their life expectancies. Great uncertainty exists regarding the availability of alternative means of waste treatment, and the economic impact of the ban. The regulations call for a scheduled phase-out (shown on Table 2) to allow time for the development of suitable disposal techniques and facilities.

**Table 2. SCHEDULE FOR LAND DISPOSAL PHASE-OUT
OF HIGH PRIORITY HAZARDOUS WASTE**

DATE	MATERIAL
June 1, 1983	Cyanide wastes
January 1, 1984	Toxic metal wastes Strong acid wastes Polychlorinated biphenyl liquids
January 1, 1985	Liquid wastes containing halogenated organics and liquid organic extremely hazardous wastes
July 1, 1985	Organic sludges and solids containing halogenated organics, organic sludges and solids that are extremely hazardous wastes, and lab packs containing restricted hazardous wastes

Good general sources for additional information regarding RCRA can be obtained from reading the Act; the Federal Register Vol. 45 No. 98, May 19, 1980, describing the hazardous waste management system; and the Federal Register Vol. 47 No. 143, July 26, 1983 describing permitting requirements for land disposal facilities.

Many of the statutes relating to State hazardous waste management, particularly with regard to the DHS, are located in Chapter 6.5, Division 20 of the Health and Safety Code. Authority for involvement by other state agencies is scattered through state law. A valuable reference on State hazardous waste and hazardous material regulation has been prepared by Richard Gilbert, District Attorney, Yolo County, entitled Hazardous Materials in California. A Summary of Applicable Law (1981).



SUPERFUND

Both the Federal and State Government have established a "Superfund" to provide for hazardous waste clean-up and management supplementing requirements of RCRA. While these "Superfunds" are largely known as measures to clean-up abandoned hazardous waste disposal sites, other provisions add significant elements to management plans. The basic provisions of the Federal and State Superfunds are shown on Table 3.

The Federal Superfund is properly known as The Comprehensive Environmental Response, Compensation and Liability Act of 1980. The State Superfund was passed as SB 618 in 1981.

**Table 3. BASIC PROVISIONS OF THE STATE AND
FEDERAL SUPERFUNDS**

FEDERAL SUPERFUND (The Comprehensive Environmental Response, Compensation and Liability Act of 1980)	STATE SUPERFUND (Senate Bill 618, 1981)
Funds to cleanup abandoned hazardous waste sites	Funds to cleanup abandoned hazardous waste sites
Post closure liability from disposal facilities	Ten percent matching funds to meet federal Superfund requirements
Cleanup cost recovery from party responsible for hazardous waste spill	Up to \$1 million annually to assist local agencies in hazardous material spill response
Emergency response to and cleanup of hazardous material spills	Funds to purchase emergency response equipment for local and state agencies Up to \$500,000 annually for health effects studies at specific sites or regarding specific substances at specific sites Up to \$2 million per year for compen- sation of certain losses caused by hazardous substance release

TRANSPORTATION AND WASTE TRACKING

The State has established a system for tracking hazardous waste from generation to treatment, storage, disposal, or reuse facilities (see Figure 4). A manifest is prepared by the generator consisting of an inventory of the types and quantities of hazardous waste. The manifest accompanies the shipment with copies given to the receiving facility. Copies are sent to the DHS from both the generator and from the receiving facility to allow checking that the designated hazardous waste is received by an appropriate facility. The generator has the responsibility to ensure that the waste has been received by comparing his outgoing manifest with that sent upon receipt of the shipment. However, while this system works well in principle, it requires an enormous amount of checking to ensure that all manifests match. The DHS reports that it now checks these manifests on a computerized system but does not have an adequate system to respond to discrepancies.

All hauling of hazardous waste must be done by a waste hauler licensed by the State. Haulers must maintain the ability to repay damages potentially resulting from the operation of the business up to defined limits. All vehicles and containers must be registered following inspection. In addition, all operators of the vehicle or containers must receive adequate training to ensure the safe handling and transportation of hazardous waste.

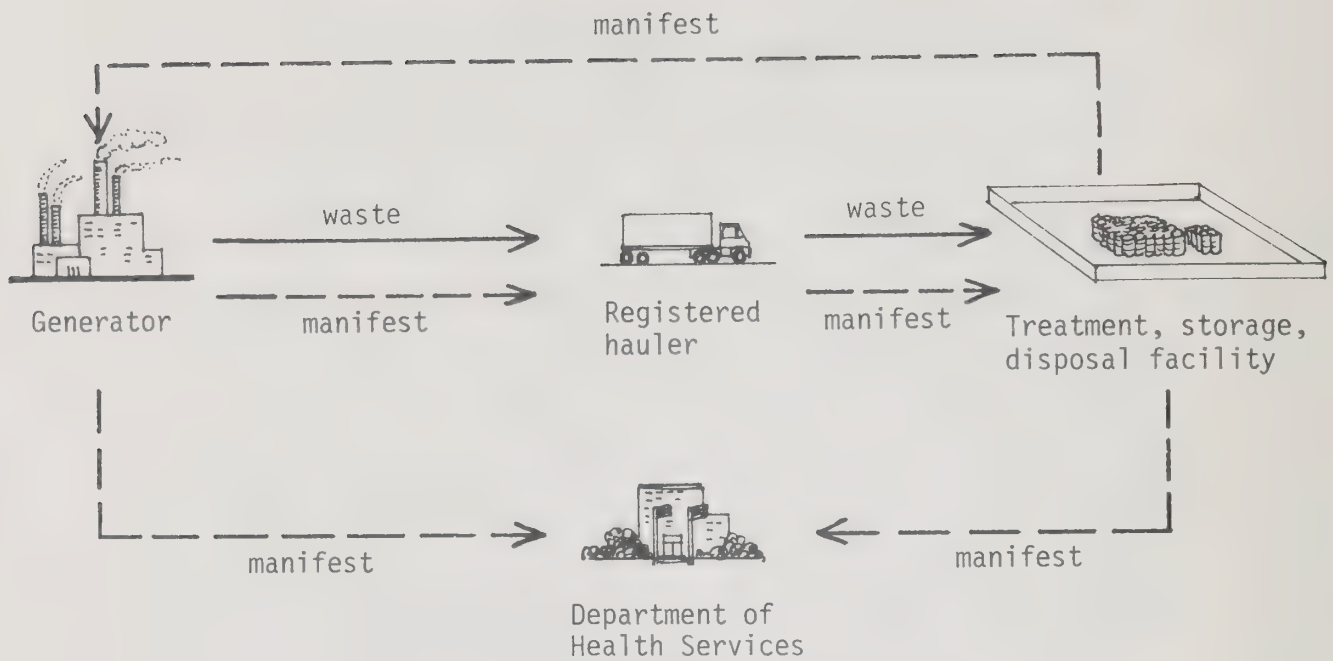


Figure 4. HAZARDOUS WASTE MANIFEST SYSTEM

Federal hazardous waste transportation standards are in 40 CFR Part 263. Pre-transport requirements are in 40 CFR Part 262. State hazardous waste transport regulations are in the Health and Safety Code Section 25163 et seq.

IV. HOW CAN HAZARDOUS WASTE BE TREATED, DISPOSED OF, OR ELIMINATED?

A great variety of processes are used to destroy, modify or isolate hazardous waste. Some processes result in the destruction of hazardous material. For example, oxidation transforms cyanide into carbon dioxide and nitrogen. Other processes are intended to restrict hazardous waste to an isolated environment, such as a landfill, without actual destruction. In many cases, the best management techniques are to limit generation or to recycle "waste" back into a useful product.

Recent California regulations restrict the use of landfills for disposal of certain hazardous wastes, reflecting a concern that the hazard may exist longer than the waste containment. The Federal government is considering the implementation of similar measures. However, certain materials, such as heavy metals, cannot ordinarily be destroyed. At best, they can be changed into an innocuous form with little potential for environmental contamination.

Off-site hazardous waste disposal is predominantly through land disposal techniques, including the use of evaporation ponds and disposal of solids in landfills. Waste disposed of on-site is more likely to be recycled, discharged as dilute effluent, incinerated, or chemically treated, as well as treated and evaporated in surface impoundments. A brief description of common methods for hazardous waste disposal is shown on Table 4.

Table 4. SUMMARY OF COMMON METHODS FOR DISPOSING OF HAZARDOUS WASTES

<u>Thermal Treatment:</u> Incineration Pyrolysis Wet oxidation	Heat treatment to breakdown organic chemical wastes. Products include water, carbon dioxide, ash, and certain acids and oxides. Environmental concerns with air emissions, and disposal of ash and liquid wastes from scrubbers.
<u>Biological Treatment:</u> Activated sludge Aerated lagoons Trickling filters Stabilization ponds Anaerobic digestion Landfarming	Process breakdowns organic wastes through biological activity. Problems with air emissions, low efficiency, process containment, variability due to environmental conditions, long retention times, large land requirements, sludge disposal, and concentration of inorganic pollutants.
<u>Chemical Treatment:</u> Neutralization Precipitation Ion Exchange Dechlorination Oxidation/Reduction	Process for using various chemical reactions to de-toxify waste. Problems with disposal of liquid, solid and sludge waste streams, risk from process chemicals, and risk from chemical reactions.
<u>Physical Treatment:</u> Sedimentation Filtration Centrifugation Flotation Membrane Separation Evaporation Distillation Extraction Adsorption	Method for separating waste streams. Subsequent disposal needed on hazardous components. Concentrates pollutants.
<u>Environmental Isolation</u> Landfills Deepwell Injection Retrievable Storage Stabilization/Solidification	Method for containing waste, restricting adverse environmental impact to dedicated area. Problems with long-term containment, uncertain routes of environmental contamination, large land requirement, air emissions.

Many innovative disposal techniques have been developed that show substantial promise, but have not been used in large scale. Other promising techniques are in prototype or developmental phases. Techniques suggested by the State Office of Appropriate Technology for meeting the provisions of the ban on the land disposal of certain hazardous wastes in California are shown on Table 5.

Table 5. SUGGESTED TREATMENT METHODS FOR HIGH PRIORITY HAZARDOUS WASTE BANNED FROM LAND DISPOSAL

Cyanide Waste	Wet Oxidation*
Toxic Metal Waste	Chemical reduction and precipitation*
Strong Acid Waste	Neutralization
Polychlorinated Biphenyl	Chemical dechlorination and incineration*
Organic Sludges	Incineration*

*residual hazardous waste and/or inert ash may remain, requiring land disposal

For further information on disposal and reduction methodologies refer to Alternatives to the Land Disposal of Hazardous Wastes. An Assessment for California by the California's Office of Appropriate Technology, 1981 (contact DHS, hazardous waste management branch (916) 324-1789 for information on availability) and Technologies and Management Strategies for Hazardous Waste Control by Office of Technology Assessment, Congress of the United States (Library of Congress Catalog Card Number 83-600706, contact Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402



WASTE REDUCTION AND RECYCLING

Perhaps the method with the greatest potential for solving problems with hazardous waste is to **reduce the amount needing to be disposed of**. While reduction can not eliminate the need for all disposal, it can greatly diminish the quantity and hazard of waste material. Methods for reducing waste include:

- o Source separation
- o Process modification
- o Recycling
- o End product substitution

Source separation prevents the contamination of relatively large quantities of non-hazardous waste with relatively small quantities of hazardous materials. For example, closed loop systems can be designed into some systems to substantially reduce the need for rinse water. The product of source separation techniques is a relatively small quantity of concentrated hazardous waste.

Modification of production processes offers great opportunity for source reduction of hazardous waste. Companies will ordinarily modify a process in response to changing economic conditions. Increased hazardous waste disposal costs may prove to be the incentive needed to modify a system to produce minimal quantities of hazardous waste.

Recycling can provide for the reduction of the waste stream and a reduction in the demand for source materials, dual environmental benefits. The growing expense of both providing raw material and disposing of hazardous waste encourage the increased recycling of material. Unfortunately, it is often difficult for generators and potential re-users to discover their mutual needs. The DHS is conducting the California Waste Exchange to encourage recycling, but this program is financed at only a minimal level.

End product substitution entails replacing a product whose manufacture or use requires the generation of significant quantities of hazardous waste with products or processes that reduce or eliminate hazardous waste generation. For example, some pesticide use may be eliminated through integrated pest management techniques such as crop rotation and pest resistant crop varieties. End product substitution has an enormous potential for reducing hazardous waste generation, but has a similar enormous potential for demanding changes in lifestyle.

V. HOW DOES HAZARDOUS WASTE AFFECT MY COMMUNITY?

Hazardous waste is both good and bad to a community. Its presence often implies industrial development and a healthy economy. However, it also can present significant risk to the population and the environment. Most people **want the benefits** associated with industry--jobs, tax revenues, consumer goods--but want to **isolate themselves from many of its costs.**

Some hazardous waste has the potential to affect a community suddenly--fire, explosion, toxic gas cloud--or it can result in chronic more subtle impacts. Hazardous waste can travel through the environment in air, water, soil, vegetation and animals. The most obvious avenue for improper disposal is through illegal dumping, commonly into water, on fields, or along roads. Hazards from clandestine dumping are particularly severe because people are usually unaware of contamination and make no effort to avoid contact. In addition, past legal disposal practices have in many cases been shown later to be inadequate.

Some hazardous waste accumulates in the environment. Many plants and animals have been shown to concentrate pollutants to levels many times greater than their exposure. Relatively low levels of environmental contamination, concentrated through the food chain, may result in significant environmental harm. Environmental effects may also be accumulative or synergistic, with exposure to several different pollutants aggravating their overall impact.

Wastes improperly dumped on land can pollute surface water and groundwater as well as the immediate soil. Hazardous materials often can leach through soil and reach the groundwater aquifer. Once contaminated, the productive use of the aquifer may be lost. Groundwater contamination also may go undetected presenting an unknown health risk for domestic and agricultural use.

Surface water contamination can occur as runoff washes hazardous materials from land or if contaminated groundwater intercepts surface water. For example, treatment lagoons can overflow and discharge into the local drainage if provisions are not adequate for diverting runoff.

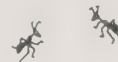
Air pollution from hazardous waste has generally received little attention compared to soil and water. However, increasing attention is being given currently to volatile organic emissions from open land disposal sites and pollutants resulting from treatment techniques such as incineration. Air pollution is particularly difficult to manage because of the lack of techniques effective in measuring and assessing airborne hazardous waste contamination.

The **perception** of risk is also very important to a community. If an activity or facility is perceived as imposing substantial risk, that activity or facility will be avoided. Land values and use patterns will reflect this assessment. For example, the development of a hazardous waste incinerator could present a lower real threat than many types of conventional industry, but result in a greater negative economic impact to the immediate community. Plans for siting a disposal facility will frequently elicit emotional and dramatic negative response, often successful in stopping development. Successful siting usually requires education and involvement to convince the community leaders of the value or at least acceptability of the project.

Prohibiting local hazardous waste facilities may in some cases increase risk, as waste must be shipped longer distances and subject to increased handling and transfer or it may be disposed of illegally. Innovative waste facilities may offer a direct means of increasing the industrial development of a community without imposing greater risk than offered by many other industrial activities. Alternatively, improper hazardous waste management can seriously degrade the economic and environmental health of a community. Therefore, it is vital that communities recognize that hazardous waste is a product of daily life, and take steps to deal with it in a responsible manner.



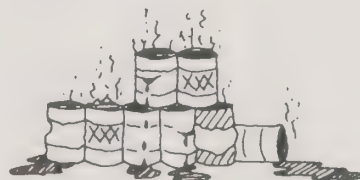
I didn't know water could burn!



WHAT ARE CURRENT PROBLEMS WITH IMPROPER DISPOSAL IN THE REGION?

Although investigations have been conducted by the DHS, no **comprehensive** record is readily available identifying sites in the Bay Area with existing problems from improper disposal of hazardous waste. No overall listing is available identifying the relative risk from hazardous waste disposal sites or identifying DHS priorities for devoting resources for mitigation. Twenty six uncontrolled hazardous waste disposal sites in the Bay Area have been identified on the State Superfund list (shown on Table 6). While sites were ranked statewide purportedly to assess relative hazard from different sites, in fact this ranking has not been useful in directing resources for remedial activities. The DHS also conducted an "Abandoned Site Project" which contains a different list of hazardous disposal sites. Actual work by the DHS is directed at only some of the sites identified through these projects, and includes work at other sites not included on these lists.

Several sites in the Bay Area have been shown to have leaking underground tanks containing hazardous materials. This material is not considered a waste in the tank, but becomes a waste after it escapes containment. Material leaking from these tanks can contaminate groundwater which in many cases is used as a drinking water supply. Underground tanks are fairly difficult to control, since leaks are not visibly obvious. The Regional Water Quality Control Board is investigating this problem in Northern Santa Clara County (Silicon Valley) and Southern Alameda County. Ordinances are being pursued requiring double layer containment of these tanks and monitoring of soil and groundwater.



I would have called... but I kept falling through the dial.



VI. WHAT CAN LOCAL COMMUNITIES DO?

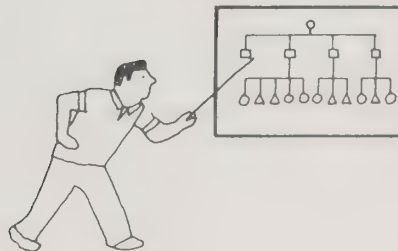
Local communities generally have not taken an active role in managing hazardous waste. Many management activities are the responsibility of the Federal and/or State government with little opportunity for local influence. However, communities can play an important role in managing hazardous waste through activities such as:

**Table 6. UNCONTROLLED HAZARDOUS WASTE DISPOSAL SITES
IN THE SAN FRANCISCO BAY AREA IDENTIFIED ON
THE STATE SUPERFUND LIST**

Ranking on State List	Site Name	County
18	Trojan Power Works Company	Alameda
36	The Clorox Company	Alameda
52	FMC Newark	Alameda
55	Leslie Salt	Alameda
56	Westinghouse (Emeryville)	Alameda
58	Electro Coating Inc.	Alameda
5	Liquid Gold	Contra Costa
21	ASARCO	Contra Costa
25	Shell Oil Company/Pacific Gas and Electric	Contra Costa
32	Centex Properties	Contra Costa
34	Chevron Chemical/Ortho Division	Contra Costa
37	United Heckathorn Company	Contra Costa
38	Point Isabel	Contra Costa
44	Point Pinole (Bethlehem Steel Corp.)	Contra Costa
48	Hercules Properties	Contra Costa
51	Chemical and Pigment Company	Contra Costa
53	Cooper Chemical, Incorporated	Contra Costa
60	FMC Richmond	Contra Costa
31	Metten and Gebhardt	San Francisco
41	Wildberg Brothers/Healy Tibbits	San Francisco
54	Sun Chemical Corporation	San Mateo
57	Pacific Gas and Electric/ Martin Service Center	San Mateo
19	Westinghouse (Sunnyvale)	Santa Clara
50	Zoecon Corporation/Chipman Chemical	Santa Clara
20	Wickes Forest Products	Solano
9	MGM Brakes	Sonoma

- o planning
- o zoning and permitting
- o facility operation and related services
- o control of small generators
- o positive incentives
- o local ordinances
- o routing
- o incident response
- o facility siting
- o enforcement

Many local government management activities would govern **all hazardous material**, without distinguishing hazardous waste. By assuming an active role in hazardous waste (and material) management, local needs and goals can be incorporated in a comprehensive management system.



... and that's just how to
decide on lunch!



PLANNING

Counties are required to prepare solid waste management plans including "a program for the handling and disposal of special and hazardous wastes." However, counties and cities generally have not developed effective hazardous waste management programs. Planning activities that could be undertaken by **local governments** include:

- o developing policies pertaining to siting and buffering of hazardous waste facilities
- o obtaining information on hazardous waste generation and disposal
- o providing information on local hazardous waste facility needs
- o providing information on possible sites for hazardous waste facility development
- o recognizing local responsibility for hazardous waste management and requiring assurance of adequate disposal and community compensation as permit conditions
- o promoting ways to reduce hazardous waste disposal needs

Regional planning can be effective in facilitating the development and implementation of county and city plans as well as identifying regional needs. Every community cannot have a self contained "cradle-to-grave" hazardous waste management system. Problems with hazardous waste do not follow jurisdictional borders, e.g., wastes from Silicon Valley may be inappropriate for disposal within Santa Clara County. If local governments assume the responsibility for assuring that hazardous wastes are properly managed, cooperation will be necessary between communities. Regional planning can serve as a general information source promoting coordination among local activities. Comprehensive assessments can be conducted to determine regional needs and suggest suitable areas for development of large scale facilities. Regional activities can provide a cost-effective means of providing local expertise and plan development. Since many elements of planning will be similar among jurisdictions, development of background material on a regional level may greatly reduce local resources needed to develop appropriate plans.

Regional planning also may provide a means of taking some of the "heat" off local elected officials who have to make difficult decisions regarding hazardous waste facilities. In many cases, suggesting that a local site is appropriate for hazardous waste facility development would be politically difficult. Determining possible locations for facility development on a regional level may provide an important initial step in the siting process. Final siting decisions will have to be done with local acceptance, but regional activities may be useful in encouraging compensation and agreements between affected communities.

ZONING AND PERMITTING

Consistent with General Plans, each community can dictate the nature of development through local zoning. Land use permits issued for new development generally follow existing zoning requirements, although variances can be allowed for inconsistent uses. Conditional use permits can be required for certain types of development. However, State law prohibits conditioning the issuance of a permit or variance based on dedicating additional land or on posting a bond to guarantee installation of public improvements unrelated to the use of the permitted property.

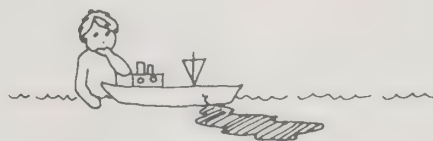
Much of the opportunity for implementing General Plan policy is through zoning. Responsible hazardous waste planning will consider what types of facilities should be allowed in different parts of the community. Zoning has the potential to influence more than hazardous waste disposal, storage and transport. Conditional use permits also could be used to control hazardous waste generators.

FACILITY OPERATION AND RELATED SERVICES

A community has the authority to own and operate a hazardous waste facility. While there is little precedent for such action, many communities now own and operate municipal waste facilities. Ownership of a facility could bring economic benefits to a community. Public development of innovative treatment and disposal facilities also could provide an important step toward reducing current dependence on hazardous waste landfills.

Recognizing that the development of new major hazardous waste facilities will be very limited, local governments may play a more important role in providing facilities for disposal from small sources. Local governments could provide collection centers or services to pick-up hazardous waste similar to that now provided for municipal waste.

A local government does not have to operate its own facilities; in many cases it may be preferable to contract operations to the private sector. Ownership may be valuable only in terms of providing initial facility development. This public/private partnership would allow public decisions of where and what type of facility should be developed in the community while retaining advantages of cost-effectiveness and efficiency usually associated with the private sector.



Is that spill big enough
to report to EPA?



CONTROL OF SMALL GENERATORS

One of the greatest areas for local government involvement is hazardous material management for small generators, including household waste. Previous efforts have been concentrated on controlling major generators, with the Federal system specifically excluding those facilities producing less than 1000 kilograms (2200 pounds) per month from waste accounting requirements. While the State program has no such distinction, the diversity and magnitude of generation from small sources has made it impractical for implementation of an effective program.

Major hazardous waste problems currently faced by small generators include:

- o lack of knowledge of hazardous waste disposal regulations
- o lack of knowledge of threat offered by waste materials
- o lack of knowledge of proper disposal and recycling methods

- o lack of knowledge of processes to reduce waste generation
- o disposal and recycling options relatively expensive
- o lack of incentives, both positive and negative, to encourage proper disposal, recycling, or reduction in generation.

Local governments have various means available to address these problems. Programs have been implemented in some communities to collect and dispose of hazardous waste from domestic users. Street side collection has the advantage of requiring minimal effort on the part of the small generator, but requires trained collection personnel, special equipment, and would be fairly expensive. At best, most communities would be able to offer this service only on a very infrequent basis, but in many cases biannual or annual collection may be sufficient. Rather than operating street-side collection services, small generators could be offered the availability of local transfer stations to bring their hazardous waste. Waste at these stations would be stored until sufficient quantities had been collected to make transfer to a major disposal or recycling facility economically practical. Local governments could either offer these services directly through operation by their own personnel, or contract with private industry.

Education of the threat offered by hazardous waste, means of proper disposal, and its integral relationship with modern society could also provide a valuable tool for controlling small waste generators. Educational programs conducted in the schools, materials distributed to industry groups, and flyers distributed in the community all could prove effective means of communicating important information. Comprehensive and successful educational programs should result in many individuals becoming aware of potential problems with hazardous waste, with many taking advantage of available resources for proper disposal.

POSITIVE INCENTIVES

Local governments may wish to provide incentives to encourage proper management of hazardous waste. These incentives could take such form as:

- o tax advantages for desired types of facilities
- o subsidize or guarantee minimal level of return to desired facilities
- o award exclusive rights, e.g., only transfer facility in area
- o develop or allow complementary facilities, e.g., road system, sewer capacity
- o favorable zoning for desired facility types
- o guaranteed use by local government, e.g., recipient of used oil from government vehicles.

Many incentive systems will be difficult for a local government because they will either require direct monetary input from or remove a source of revenue to the local budget. Others will require identification of desired services, and devising measures to encourage their implementation.

LOCAL ORDINANCES

Ordinances provide a means for local government to play a regulatory role in hazardous waste management. Local ordinances will frequently **not be restricted to hazardous waste** and will include the broader issue of **all hazardous materials**.

In the San Francisco Bay Area, a hazardous material storage ordinance developed by an Intergovernmental Council has been adopted by several cities in Santa Clara County. This ordinance has the following major provisions:

- o All facilities storing hazardous material must have a **local permit**.
- o All new hazardous material containers must have a **secondary level of containment** to prevent environmental release should the primary containment fail. Existing facilities must show proper functioning of primary containment through monitoring and inventory control.
- o A hazardous material **management plan** must be filed.
- o A hazardous material **inventory statement** must be filed with the information available to the public excepting trade secrets.
- o Any unauthorized discharge must be **cleaned up** immediately and the spiller required to **pay all costs** incurred by the city.
- o The city can conduct **facility inspections**.
- o **Administrative enforcement** procedures are established.
- o **Criminal and civil actions** with civil penalties for ordinance violations are allowed.
- o Areas of **state preemption** are identified - e.g., waste stored under State DHS permit would not be subject to local ordinance.

Perhaps the most controversial aspects of this ordinance are the requirements that a facility provide an inventory of hazardous material and allow a local inspection. A key issue was whether to allow release of this information to the general public (as recommended), or to restrict access to local response agencies such as police and fire departments.

This ordinance serves as an example of the ability of local governments to become actively involved in the management of hazardous material. While this ordinance deals primarily with hazardous material, hazardous waste will frequently fall under the authority of this ordinance.

Considerable confusion exists regarding the ability of local governments to impose requirements to hazardous waste disposal facilities in addition to those required by State or Federal law. Certain restrictions to local authority are clearly identified by Statute, the most noteworthy being that local governments cannot change the regulation of an existing hazardous waste disposal facility and that State hazardous material transportation laws preempt all local regulations.

ROUTING

Local governments have the authority to regulate the transport of hazardous materials on local streets and roads. They do not have the authority to regulate transport on interstate highways except on bridges and tunnels within their jurisdiction. Thus, while some routing can be done by local governments, it is severely restricted.

Local police officers cannot currently enforce standards and regulations adopted by the DHS relating to hazardous waste transportation. However, a bill is currently being pursued in the State legislature (AB 1832) to give local jurisdictions this authority.

INCIDENT RESPONSE

An obvious area for local involvement is in response to hazardous material releases of immediate threat to public safety, health or the environment. Many of these releases will be of hazardous material rather than hazardous waste but the necessary response to each is similar.

Historically, most "spills" have been responded to by the local fire departments, usually ill-equipped and untrained to deal with hazardous material. Clean-up often took the form of washing material into the sewer, thus contaminating local streams, lakes, and ultimately the Bay.

Many communities are now trying to provide training and equipment to establish an adequate system of spill response. Sources of training are generally inadequate, expensive, and of varying quality. Equipment needs are still uncertain. However, some communities are implementing comprehensive spill response programs and establishing special incident response (hazmat) vehicles. Attempts also are being made to establish a regional training program.

Intimately related to preparation for incident response is knowledge of the risk present to the community. Knowing something about the types and quantities of materials provides valuable information to determine the level of commitment necessary for adequate community protection. This information also provides some opportunity to pursue preventative measures. Thus, a comprehensive local government incident response program will be greatly enhanced by a material inventory.

Further information on incident response is available in the San Francisco Hazardous Spill Prevention and Response Plan, Volume I. Issues and Recommendations. Association of Bay Area Governments, 1983.

FACILITY SITING



Siting of a hazardous waste facility will usually require a local land use permit. This authority gives the community substantial influence on the type of permitted development, following objectives described in the General Plan and reflected in zoning ordinances.

The California Environmental Quality Act (CEQA) requires any public agency which either permits or proposes a discretionary project (requiring judgment on the part of the agency) to consider the environmental impact of that project. If the project has a significant potential effect on the environment, an environmental impact report must be prepared.

A city or county will usually be the lead agency for the preparation of an Environmental Impact Report for siting a hazardous waste facility. A lead agency is the agency with principal responsibility for approving a project that requires approval from multiple agencies. Hazardous waste facilities frequently also require permits from the Regional Water Quality Control Board and the Air Quality Management District. Permits from other Federal and State agencies such as the Army Corps of Engineers and the San Francisco Bay Conservation and Development Commission may also be required depending on site specific conditions.

An environmental impact report must describe seven basic features of the proposed project:

- o significant environmental effects
- o unavoidable environmental effects
- o mitigation measures
- o project alternatives
- o the relationship between short-term use and long-term productivity
- o significant irreversible environmental changes
- o growth-inducing impacts

Having adverse environmental impact does not preclude project development. The value of the Impact Report is primarily to provide information from which to assess the detrimental impact of the project and develop alternatives to minimize this impact. Of course, the alternative of no project at all may be best for some projects with severe environmental consequences.

An important part of the CEQA process is a public participation requirement. This allows local input and can be very effective in causing substantial project modification or even halt development. Public participation is also part of the permitting process of the Department of Health Services, Regional Water Quality Control Board, and Air Quality Management District, giving substantial opportunity for local involvement in the siting process.

ENFORCEMENT

Local governments have the authority to enforce both local ordinances and many of the State regulations. In addition, the State is making an attempt to transfer much of its hazardous waste enforcement responsibility to the local level. For example, Contra Costa County has entered into an agreement with the State DHS that recognizes the authority of the local Health Officer to enforce state regulations and outlines primary areas of County responsibility.

Local health officers have the right to inspect any hazardous waste facility, vehicle transporting hazardous waste, waste samples, or required hazardous waste records. Many local communities have adopted fire codes which also allow firefighters to inspect facilities. However, local law enforcement personnel do not currently have the authority to inspect or cite transporters in violation of hazardous waste shipping regulations.

Upon finding possible violations of hazardous waste regulations, local governments can seek remedies through:

- o prosecution (resulting in fines and/or imprisonment; penalties are specified under State law for failure to comply with hazardous waste regulations)
- o injunctive relief (court order prohibiting action)
- o administrative action (e.g., revoking permit, normally done by State DHS for hazardous waste facilities but possibly could be done for conditional use permit)

Local governments can also seek remedy by notifying regulatory agencies of infractions, e.g., Regional Water Quality Control Board, Air Quality Management District.



VII. FINANCING LOCAL GOVERNMENT HAZARDOUS WASTE MANAGEMENT ACTIVITIES

In this post Proposition 13 era of austerity, local governments are usually reluctant to assume new responsibilities. Involvement in hazardous waste management can impose a significant financial burden and will frequently be a major obstacle to community involvement. While resources are scarce, some opportunity does exist for local governments to provide revenue and/or shift priorities to allow involvement in this area. Major financing sources include:

- o general funds
- o special taxes
- o benefit assessment districts
- o business license taxes
- o fines and penalties
- o revenue bonds
- o hazardous waste facility tax

GENERAL FUND

The General Fund of a community could be used to finance hazardous waste management activities. However, cities and counties are finding it extremely difficult to balance their budgets while providing existing services, and have little excess revenue. Since property taxes are now limited to 1% of assessed valuation (following Proposition 13) and sale and use taxes cannot practically be raised, little opportunity normally exists for providing additional revenue from the General Fund for hazardous waste activities.

More opportunity probably is available for modifying the responsibilities of existing agencies, departments and individuals to reflect an interest in hazardous waste. For example, planning departments can be directed to prepare hazardous waste management plans, or elements to existing plans. Similarly, fire departments can assume a more active role in facility inspection and development of incident response capability. However, adding duties to existing programs will usually have to be done at the expense of other responsibilities, so it is imperative to carefully assess priorities for resource distribution.

SPECIAL TAXES

Special taxes can be imposed by local agencies with approval by a **two-thirds** vote. Approval by this overwhelming margin is very difficult to obtain, but may provide a means of collecting revenue for a critical need. Some special taxes have been approved in the Region, including providing funds for road maintenance in Santa Clara County, paramedics in San Rafael, mosquito abatement in Alameda County, and municipal services in Atherton, Hillsborough and Piedmont.

BENEFIT ASSESSMENT DISTRICTS

Benefit-assessment districts may be formed to provide services (notably police and fire protection) to specifically benefitted properties. The Legislature is now considering several bills to clarify the benefits assessment district concept because existing laws are conflicting and confusing.

BUSINESS LICENSE TAXES

Cities and counties may assess business license taxes to recover the cost of **regulating** business within their jurisdiction. Thus, there is the potential for funding activities such as enforcement of local disclosure and inspection ordinances through the receipt of fees from the regulated industries.

FINES AND PENALTIES

Violation of local ordinances can require payment of fines and penalties. Perhaps the most obvious example is parking ordinances. Fees and penalties could also be assessed for violation of ordinances such as the local fire code or route restrictions.

REVENUE BONDS

Revenue bonds may offer a mechanism for local governments to obtain the money necessary to develop a hazardous waste facility. Revenue bonds can only be issued for development of a **revenue producing** enterprise. Hazardous waste facilities may qualify for these bonds as these facilities should generate a predictable financial return. No hazardous waste facilities in the State have yet been financed through this mechanism.

HEALTH ORDINANCE

Section 510 of the California Health and Safety Code allows local governments to charge fees and/or assess property to provide for enforcement by local public health officers or employees of regulations important to public health. Revenues could be raised under this regulation for supporting local enforcement of hazardous waste regulations.

HAZARDOUS WASTE FACILITY TAX

Any city or county can impose a tax of **up to 10% of total gross receipts** upon an existing off-site hazardous waste disposal facility. While few communities have such facilities, the few that do can generate a large amount of income. For example, the city of West Covina in the Los Angeles area receives about **\$1.4 million per year** from the BKK Company for operation of their landfill. This tax may provide substantial incentive to a community considering allowing the development of a hazardous waste facility, providing the legislation is extended to include new facilities.

VIII. CONCLUSIONS: WHERE ARE WE NOW AND WHAT SHOULD WE DO?

It is important to recognize two basic concepts about hazardous waste:

- o IT CAN BE A SUBSTANTIAL THREAT TO HEALTH AND THE ENVIRONMENT
- o IT IS AN INTEGRAL PART OF OUR MODERN SOCIETY

Measures can be taken to control this threat while maintaining or enhancing the quality of life. Federal and State government have taken active roles in managing hazardous waste, and have made substantial progress. Still, much work needs to be done.

Communities should be aware of the significance of this issue, problems with current management, and options for local involvement. Awareness must be increased that most disposal occurs on-site, although most publicity and information deals with off-site disposal. With sufficient information, a local government can make difficult decisions regarding the role that it should take in managing hazardous waste. Only with this input can hazardous waste management systems adequately reflect and make use of local needs and abilities.

IX. TELEPHONE NUMBERS FOR OBTAINING FURTHER INFORMATION ON HAZARDOUS WASTE

California Department of Health Services

Public Information	(916) 324-1789
Toxic Substances Control Program	(916) 322-7202
Toxic Substances Control Division	(916) 324-1826
Hazardous Waste Hauler Registration	(916) 324-2428
Hazardous Waste Site Cleanup	(916) 324-3773
Emergency Response	(916) 324-2445
Alternative Technology Review	(916) 324-1819
California Waste Exchange	(415) 540-3000 or (916) 324-1816
Hazardous Waste Property Designations	(916) 324-1801

Berkeley Office, Hazardous Waste Management Unit	(916) 540-2043
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California Department of Food and Agriculture

Public Information	(916) 445-9280
Pesticide Enforcement	(916) 322-5032

California Air Resources Board

Toxic Pollutants Branch	(916) 322-6023
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California Highway Patrol

Sacramento Office, Motor Carrier Section	(916) 445-6211
Golden Gate Division, Motor Carrier Unit	(415) 658-2928
Emergency Calls	Zenith 12000 (call operator)

California Department of Fish and Game

Yountville Regional Headquarters	(707) 944-4460
Emergency Law Enforcement	(415) 557-0220

California Department of Water Resources

Public Information	(916) 445-9248
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California Solid Waste Management Board

Office of Policy and Program Analysis	(916) 322-8742
Waste Management Division	(916) 322-6172

TELEPHONE NUMBERS Continued

California State Water Resources Control Board

Hazardous Waste Unit	(916) 322-0218 or (916) 322-0217
Surveillance and Monitoring	(916) 322-0214 or (916) 322-0217

California State Board of Equalization

Sacramento Headquarters	(916) 445-6464
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California Regional Water Quality Control Board

General Information	(415) 464-1255
Underground Tank Program	(415) 464-1346 or (415) 464-0379
Permitted Sites	(415) 464-0432

Bay Area Air Quality Management District	(415) 771-6000
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Association of Bay Area Governments	(415) 841-9730
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ACKNOWLEDGEMENTS

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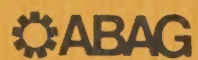
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Charles White, Regional Administrator, Hazardous Waste Management Branch, California Department of Health Services
Cecil Williams, Director, Contra Costa County Office of Emergency Services

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